

OPTIMIZING PROTEIN INTAKE FOR ATHLETES

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WHY ARE YOU HERE?

- How much protein?
- What types?
- When and how often?
- What makes ineffective?

HIT

PRO

GAINS

Key Variables:

- High effort (failure)
- Time under tension
- Volume
- Frequency of bouts
- Training age

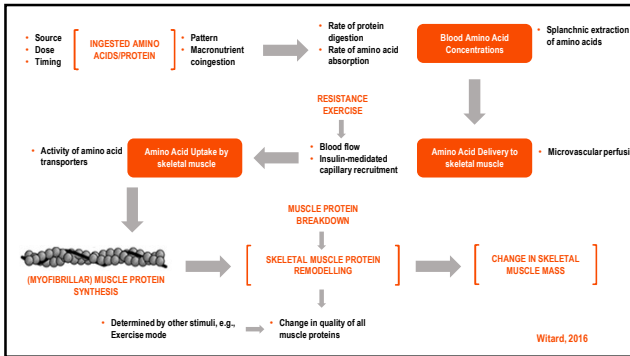
Key Variables:

- Source
- Dose
- Timing
- Pattern
- Macro coingestion

Negative net protein balance:
Breakdown and removal of damaged and/or dysfunctional proteins

Positive net protein balance:
Synthesis of new proteins for repair and growth

Morton, 2015



OUTLINE

- Current understanding of protein needs**
 - Relative vs. absolute recommendations
 - Protein timing
 - How much is too much
 - Night-time protein
 - BCAAs
- Inhibitors of MPS**
- Cost effective protein**
- What to do when not hungry**
- Q & A**

TOO MUCH PROTEIN?

Myth that AA just hang out waiting to be used if over-eaten.

20 g milk-based protein ingested

- ~80% of ingested protein is extracted by splanchnic tissues (gut, liver) prior to entering circulation
- Remaining ~40% of ingested protein is catabolized
 - Energy
 - Gluconeogenesis
 - Neurotransmitter production
- ~10% (2.2 g) de novo protein synthesis

Stokes, 2018

RELATIVE VS. ABSOLUTE RECOMMENDATIONS

Moore, 2009

MPS at rest is maxed out at 20g whey (40g mixed meal)

Post-Exercise

- 10g = 20g = 2x MPS
- 20g = 40g increases MPS but diminishing

Whole body RT drives greater needs

Witard, 2014
MacNaughton, 2016

KEY AMINO ACID IN MUSCLE GROWTH

EAA and Leucine content of different protein sources

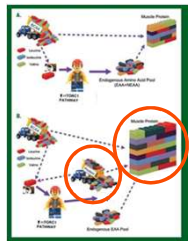
Wolfe, 2017

BRANCH CHAIN AMINO ACIDS FOR MAX GROWTH?

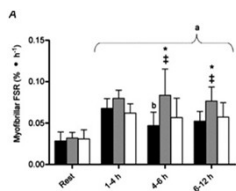
Whole protein (EAAs) > BCAAs

Leucine content is the driver of "protein quality" when it comes to MPS.
 • Milk, eggs, whey

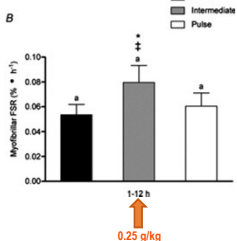
When whole protein consumption is limited – acute negative energy balance



PROTEIN ALL THE TIME! NOT EXACTLY.



Areta, 2013

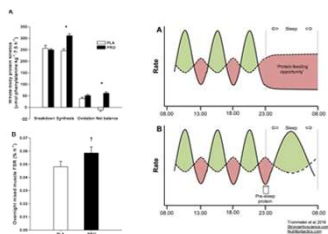


0.25 g/kg

NIGHT-TIME PROTEIN

40g before bed (0.5 g/kg)
 Res, 2012

40g > 30g +2g leucine
 Trommelen, 2017



BUT IF I EAT TOO MUCH PROTEIN I'LL GET BIG

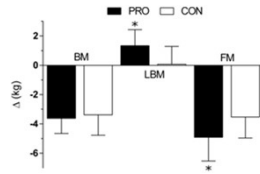
Athletes concerns of wt gain if adding protein...

RT + Hpro + Cal Restriction =

- Lighter & Leaner w/ increased LBM

Protein is the most satiating macro

- Should be the base of any weight loss plan (athlete or non)



Longland, 2016

OPTIMIZING MUSCLE MASS ACCRETION

So many variables

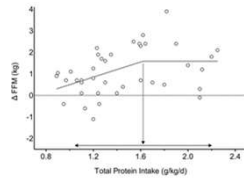
- Does
- Timing
- Source
- Concurrent training

1.6 – 2.2 g/kg/day

- 0.4 g/kg every ~4 h + 0.5 g/kg pre-bed
- 0.3 when just using whey isolate
- Almost always doing whole body RT

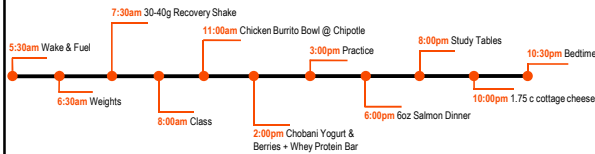
2.3– 3.1 g/kg/day

- During long-term energy restriction
- Trained athletes lose LBM faster than untrained
- Leucine (3.5g) during acute energy restriction



Morton, 2017
Stokes, 2018

FUELING PATTERN – 220LB FOOTBALL PLAYER



BEER BELLY GAINZ

ALCOHOL INGESTION HAMPERS THE DESIRED MUSCULAR ADAPTATIONS TO RESISTANCE EXERCISE

The magnitude of muscle hypertrophy observed from 12 weeks resistance training is reduced by ingestion of beer alcohol or ethanol (10% of total caloric intake) for the study period.

ALCOHOL SIGNALLING

PRE +3h +5h

Reference: by BJ Doherty et al. JCS, May 2014. Designed by @1515Fitness

Condition	FSR (%·h ⁻¹)
Rest	~0.025
ALC-CHO	~0.032
ALC-PRO	~0.038
PRO	~0.052

JUST GET CALORIES???

PUFAs vs. SFA

- SFA had greater visceral fat gains
- PUFAs had 3x greater LBM gains


CONSIDER THE COCONUT!

Rosqvist, 2014

COST EFFECTIVE PROTEIN

PROTEIN SUPPS???

- Whey
- Peas/Hemp
- Soy
- Vegan blends
- Casein
- BCAAs
- L-arginine
- Vitamin D
- Omega-3
- NMS



A meme featuring a baby with a mischievous expression, wearing a green shirt. The text overlaid on the image reads: "BOUGHT NEW PROTEIN POWDER" at the top and "SCOOP WAS ON THE TOP" at the bottom.

RESOURCES

GSSIweb.org
YLMsports-science.com
Yann Le Meur
Mysports-science.com
Asker Jeukendrup
SportsRD.org
CPSDA – educational resources

THANK YOU



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